Inequality and intergenerational transmission of complex adversity

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Young people exposed to adversity often have poor health outcomes in adulthood. A large body of evidence links adverse childhood experiences (ACEs) with impaired health and social functioning in later life in a dose-response fashion, which is suggestive of a causal relationship.[1,2] Minimisation of exposure to early adversity and building of resilience in the face of such adversity are important to reduction of the burden of disease, improvement of public health, and reduction of health inequalities.

In their systematic review and meta-analysis of the ACE literature in *The Lancet Public Health*, Karen Hughes and colleagues[3] highlight the diversity of poor health outcomes associated with childhood adversity: exposure to at least four ACEs was associated with increased odds of poor mental, physical, and sexual health; harmful substance use; violence (perpetration and victimisation); and physical inactivity. The effects of early adverse life experiences on subsequent health trajectories are evidently profound and diffuse. Just as ACE exposures tend to cluster together within disadvantaged individuals and communities,[4] so too do the poor health outcomes associated with these exposures. Both the social gradient in health and the concentration of the burden of disease in disadvantaged populations are well documented.[5,6]

One particularly striking finding from Hughes and colleagues[3] is the association between multiple ACE exposures and subsequent suicide attempts (odds ratio [OR] 30·14 [95% CI 14·73–61·67]). The association between ACE exposure and self-harm—which is more prevalent than and is strongly associated with subsequent suicide[7]—was not examined. Also remarkable was the consistent association between ACE exposure and poor health outcomes across settings and populations, despite marked heterogeneity in exposure definition and outcome measurement. Although most of the included studies measured a core set of ACEs, what the so-called core ACEs are is debated in the literature,[8] and the included studies also measured various other ACEs. The consistent association between exposure to at least four ACEs (versus none) and poor health outcomes, irrespective of the particular combination of ACEs, points towards a causal pathway defined by cumulative exposure to stress, trauma, and adversity, rather than specific effects of exposure to particular individual adversities.[1]

Hughes and colleagues[3] also point out that the health outcomes most strongly associated with multiple ACE exposure—such as problematic substance use—themselves potentially represent ACEs for the next generation. This finding further strengthens the case for upstream public health approaches, particularly in disadvantaged populations in which the prevalence of both ACE exposure and poor health outcomes are comparatively high. Effective responses to ACEs have the potential to improve the health of young people now, their health in later life, and health outcomes for their children—a compounding benefit described in the *Lancet* Commission on adolescent health and wellbeing[9] as the "triple dividend".

Translation of these important findings into improved public health outcomes is complicated by some limitations of the literature on which this systematic review and meta-analysis[3] is based. First, the epidemiology of ACE exposure at the population level is poorly understood. Although estimates have been made of the burden of child maltreatment in some high-income countries,[10] little is known about the prevalence of exposure to other ACEs, which ACEs tend to co-occur, or the epidemiology of ACE exposure in low-income and middle-income countries. Among the included studies, 57% of participants were exposed to at least one measured ACE, such that ACE exposure appears normative. This finding raises questions about the ecological validity of treatment of no ACE exposure as the reference category in analyses.

Second, interpretation of the ACE literature is complicated by marked heterogeneity in the category of exposure to at least four ACEs. In a study[9] measuring nine ACEs (the mean number in the studies included by Hughes and colleagues[3]), 382 possible combinations of ACE exposure exist that would produce an ACE score of at least four. ACE exposures could have been acute or chronic, and could vary in intensity. Although the ACE literature by definition focuses on childhood, most

of the included studies counted exposures from birth up to age 16 years or 18 years—that is, including early (10–14 years) and late (15–19 years) adolescence.

Third, most included studies were cross-sectional (26 [70%] of 37), and all relied on retrospective self-report to identify exposures. Although some included studies reported a dose-dependent relationship between ACE exposure and poor health outcomes,[1,2] heterogeneity in construction of the exposure variable precluded meta-analysis of this relationship. As such, the report[3] provides only weak evidence for a causal association between ACE exposure and poor health outcomes.

One regrettable feature of Hughes and colleagues'[3] report is that studies of high-risk populations (eg, people who were homeless or incarcerated) were excluded, premised on the view that few would have had no ACEs. Vulnerable populations are all too often excluded from health research.[11] Given the disproportionate burden of ill health in such individuals and probable disproportionate economic benefit from upstream, targeted prevention of this health burden,[12] whether or not evidence gleaned from unselected populations is applicable is important to know. Given the association between exposure to at least four ACEs and key risk factors for incarceration (eg, an OR of 10·22 [95% CI 7·62–13·71] for problematic drug use and 8·10 [5·87–11·18] for violence perpetration) and that most included studies treated household criminality as an ACE (27 [73%] of 37), one fruitful avenue for future research will be to explore how life-course and intergenerational transmission of health inequity intersect with intergenerational transmission of incarceration risk. In recognition of the links between health adversity and criminal justice system exposure,[13] Hughes and colleagues[3] recommend incorporation of ACE-informed practices into criminal justice settings—a recommendation that aligns well with suggestions in the ACE literature for a trauma-informed response to young people showing behavioural problems,[14] such as those in the youth justice system.[15]

The systematic review and meta-analysis by Hughes and colleagues[3] persuasively shows an association between multiple ACE exposure and poor health outcomes in adulthood. A crucial focus of future research will be to identify factors associated with good health outcomes among those exposed to multiple ACEs—that is, studies of resilience. Evidence-based efforts to increase resilience in children and adolescents will disproportionately benefit disadvantaged communities in which ACE exposure is high, thus directly addressing the Sustainable Development Goal of reducing inequalities.

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